PINEGROVE DUPLEXES (PWS #1280138)
SOURCE WATER ASSESSMENT DRAFT REPORT

April 4, 2001

State of Idaho
Department of Environmental Quality

EXECUTIVE SUMMARY

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for Pinegrove Duplexes (PWS 1280138)*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Pinegrove Duplexes' drinking water system consists of one well. At the time of the water system's last sanitary survey (2002) it was determined that it was mostly in compliance with the Idaho Rules for Public Drinking Water Systems.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Pinegrove Duplexes should focus source water protection activities on keeping the area immediately surrounding the wellhead free from potential contaminants. This includes storing all materials that could have an adverse effect on drinking water in an area outside of the recharge zone and more than 100-feet from the well. These improvements should be made in accordance with the 2002 sanitary survey recommendations. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies, please contact your regional Idaho Department of Environmental Quality office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR PINEGROVE DUPLEXES

Section 1. Introduction and Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. It is important to review and understand this information and the ranking of this source. A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached.

Level of Accuracy and Purpose of the Assessment. The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible.

This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The amount and type of information necessary to develop a source water protection program should be determined by the local community and based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. General Description of the Source Water Quality.

Pinegrove Duplexes serves a community of approximately 50 people, located on the south side of I90, just west of the city of Coeur d'Alene, Idaho (Fig. 1). The Pinegrove Duplexes public drinking water system is comprised of one well. The well has a history of providing safe drinking water to the public.

Water sampling completed on 12/8/92 revealed the presence of p-Dichlorobenzene at 1.0ug/L, which is well below the 75.0ug/L maximum contaminant level for that chemical. Most commonly, p-Dichlorobenzene is associated with discharge from chemical factories. Tetrachloroethylene was detected in a water sample at 2.1ug/L on 10/8/92. The maximum contaminant level for that chemical is 5.0ug/L. Tetrachloroethylene is often associated with leaching from PVC pipes and discharge from factories and dry cleaners. As these chemicals were only detected one time each during the well's sampling history, it is likely that their detection was due to poor sampling technique. Each of the three tests that followed an unacceptable contaminant level revealed no chemical contamination excesses. Therefore, we believe that the contaminant-positive results were due to poor sampling by the employee who has since been terminated. Occasionally, water samples have tested positive for the presence of total coliform bacteria. The last positive total coliform bacteria sample was taken 11/25/98.

Pinegrove Duplexes is currently not facing significant water quality issues. The water system manager has demonstrated a desire to improve the quality of the water system and has recently improved the construction and the cleanliness of the site. All aspects of this report have been carefully updated to include improvements in construction, cleanliness, and information provided by the system manager and by Mike nelson at Panhandle Health.

Defining the Zones of Contribution – Delineation. The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time of travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the three-year (Zone 1B), six-year (Zone 2), and ten-year (Zone 3) times-of-travel (TOT) for water associated with the Rathdrum Prairie aquifer in the vicinity of Coeur d'Alene, Idaho. The computer model used site specific data, assimilated by DEQ from a variety of sources including the city and other local well logs. The delineated source water assessment area for Pinegrove Duplexes can best be described as a 200' wide path extending from the wellhead, south to the Spokane River. The actual data used by DEQ in determining the Source Water Assessment Delineation Area are available upon request. The time of travel for Pinegrove Duplexes is zero to three years (see Figure 2).

Identifying Potential Sources of Contamination and Land Use. A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation area were obtained by field surveys conducted by DEQ, from available databases and from information obtained from the system operator.

The dominant land use in the area surrounding Pinegrove Duplexes is multi-family residential. A motel and an elderly care center are located next to the property. For this reason, we classified the land use as multi-family residential. The potential contaminant score for multi-family residential classification is one. This score takes potential contaminates such as septic lines and household wastes into consideration.

A concrete company and a gravel yard are located in the zero to three-year recharge zone. Due to the similarity of the businesses, we combined them in the Potential Contaminant Inventory and identified IOC, VOC and SOC as the potential contaminants, each counted only one time. A lumber mill/log yard is located in the zero to three-year recharge zone as well. The identified potential contaminants for this type of business are IOC, VOC and SOC. A railroad crossing also exists in the zero to three-year time of travel zone. There are two sets of tracks but because only one set of tracks would be used at a time, we counted the railroad only once in the potential contaminant inventory. The potential contaminants for a railroad are IOC, VOC and SOC. The Spokane River and a barrow pit are located within the zero to three-year recharge zone. The Spokane River is a potential source of surface water contamination in the recharge zone. The barrow pit is a potential source of contamination due to the possibility of ponding. Both are sources of potential microbial contamination and are scored as a single source.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process. A two-phased contaminant inventory of the study area was conducted during February and March of 2001. The first phase involved identifying and documenting potential contaminant sources within the Pinegrove Duplexes source water assessment area through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to validate the sources identified in phase one and to add any additional potential sources in the area.

A total of four potential contaminant sites are located within the delineated source water area (Table 1). These sites include a concrete company and gravel yard, a lumber mill/log yard, two railroad corridors, and the Spokane River and a barrow pit (Figure 2).

Table 1. Pinegrove Duplexes Potential Contaminant Inventory

SITE #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants
1	Concrete company and gravel yard Lumber mill/log yard	3	Database Search and operator identification	IOC[2], VOC[2], SOC[2]
2	Railroad corridor (2)	3	Database Search and operator identification	IOC, VOC, SOC
3	Spokane River and barrow pit	3	Database Search and operator identification	Microbial

[1] TOT = time of travel (in years) for a potential contaminant to reach the wellhead

[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 1. Geographic Location of Pinegrove Duplexes

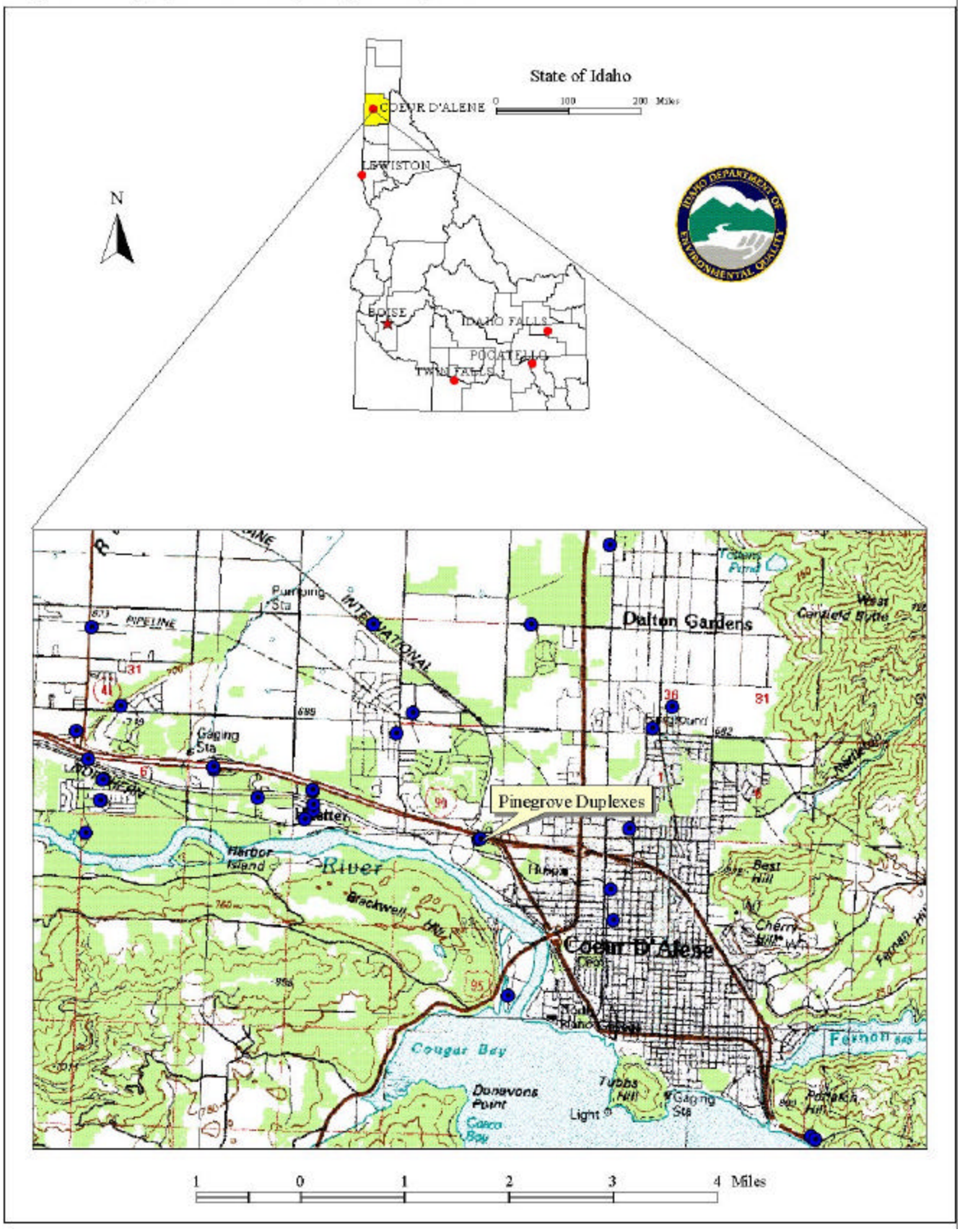
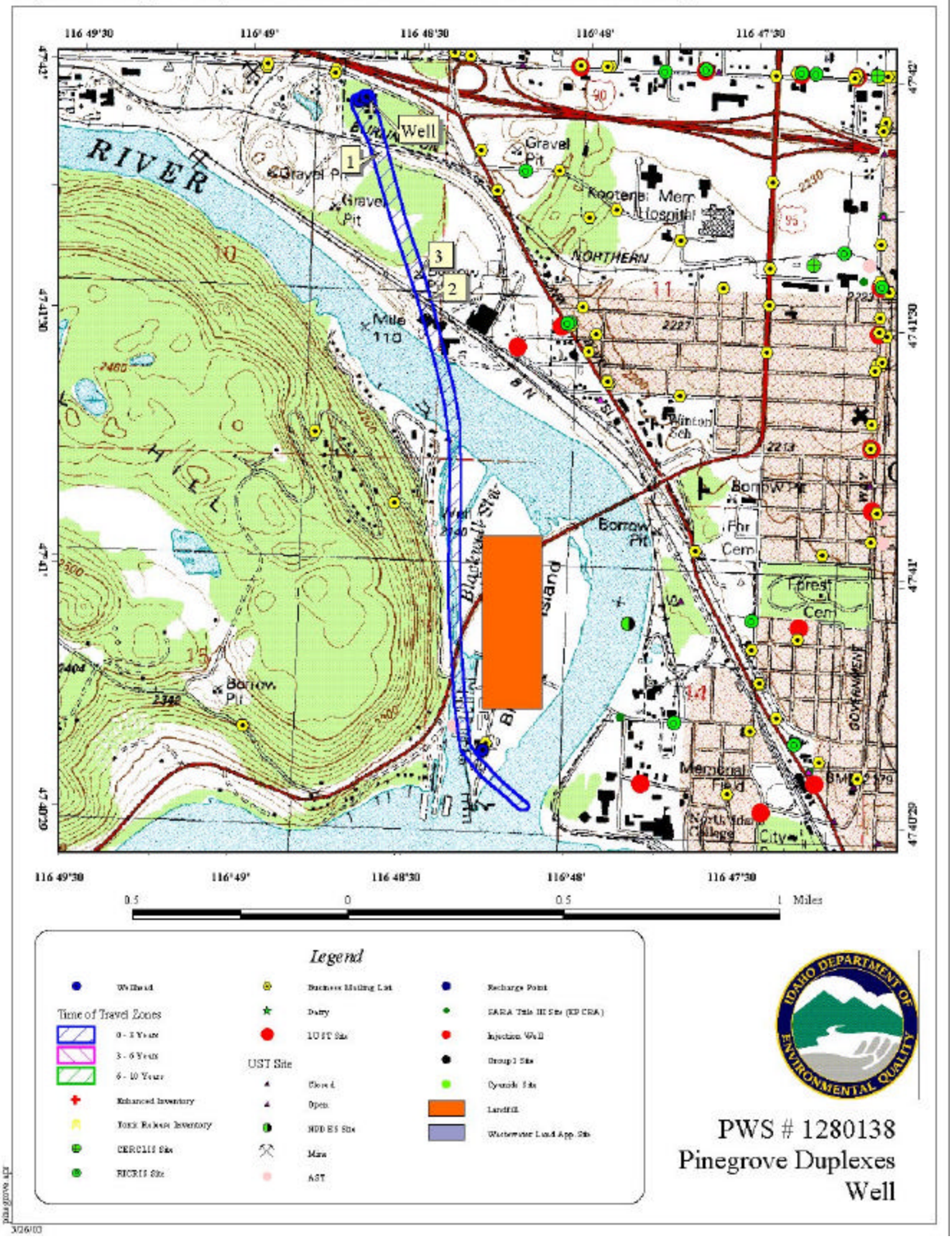


Figure 2. Pinegrove Duplexes Delineation and Potential Contaminant Inventory.



Section 3. Susceptibility Analysis

The susceptibility of the source to contamination can be ranked high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Please note that low numbers are favorable because high scores indicate increased susceptibility to contaminants. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity. The well's hydrologic sensitivity is high and has received a score of six out of six possible points. This score reflects the porous nature of the soils associated with the Rathdrum Prairie aquifer, the lack of significant confining layers retarding the vertical transport of contaminants, and unknown factors due to the absence of a well driller's report.

Well Construction. Well construction directly affects the ability of the well to protect the aquifer from contaminants. Lower scores imply the system is better able to protect its water. The Pinegrove Duplexes drinking water system consists of one well that extracts ground water for domestic use. Water extraction is currently monitored and managed by the system operator. The well's system construction score received a score of four out of six. The wellhead and surface seal has been maintained and it is located outside of the 100-year flood plain. A sanitary survey was completed in 2002. The operator has poured a concrete floor and equipped the well with an automatic sump pump.

This well was dug before it was mandatory to submit well logs to public record. The moderate score reflects the absence of a well log that made it impossible to determine, with complete certainty, whether or not IDWR construction standards have been completely met. We are thus unable to definitively verify whether or not the casing extends to a low permeability unit and whether or not the highest production is at least 100 feet below static water level.

FinalSusceptibilriy Ranking. It can be seen from the following table (Table 2) that the well showed a moderate overall susceptibility to contamination. This ranking is a product of the State of Idaho's Source Water Assessment Plan and the Idaho Rules for Public Water Systems.

Table 2. Summary of Pinegrove Duplexes Susceptibility Evaluation

Cumulative Susceptibility Scores for Community & Non-Community Non-Transient Systems						
Well Name	System Construction 0-6 possible	Hydrologic Sensitivity 0-6 possible	Contaminant Inventory plus Land Use			
			IOC 0-30 possible	**VOC** 0-30 possible	**SOC** 0-30 possible	**Microbial** 0-30 possible
Well #1	4	6	10	10	10	3

Final Susceptibility Scores/Ranking				
Well Name	IOC 0-18 possible	VOC 0-18 possible	SOC 0-18 possible	Microbial 0-18 possible
Well #1	12	12	12	11

Low numbers are favorable because high scores indicate increased susceptibility to contaminants
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully-developed source water protection program will incorporate many strategies. Pinegrove Duplexes should remain in contact with Mike Nelson of Panhandle Health District, Sandpoint, Idaho. The water system should consider developing a source water protection plan with public education and emergency response components. Public education can consist of informing residents about the presence of a source water protection area in their vicinity and instructing them on the proper use and disposal of chemicals within that area. An emergency response or contingency plan outlines the steps to be taken in the event that the well becomes contaminated and identifies an alternative source of drinking water. Partnerships with state and local agencies and industry groups should be established and are critical to its' success. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance

Public water supplies and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan.

Idaho Department of Environmental Quality

Coeur d'Alene Regional IDEQ Office	(208) 769-1422
State IDEQ Office, Boise	(208) 373-0502
Website:	http://www.deq.state.id.us/

Idaho Rural Water Association

Melinda Harper, Groundwater Protection Specialist	(800) 962-3257
Website:	http://www.idahoruralwater.com

Idaho Association of Soil Conservation Districts

Water quality and soil conservation	(208) 338-5900
Website:	http://www.iascd.state.id.us/

References Cited

Idaho Department of Environmental Quality, 2002. Coeur d'Alene Regional Office Technical Services Delineations Draft Report.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Department of Agriculture, 1998. Unpublished Data.

Attachment A

Pinegrove Duplexes

Susceptibility Analysis Worksheet

Ground Water Susceptibility Report Public Water System Name : PINEGROVE DUPLEXES Well : WELL #1

Public Water System Number 1280138 4/2/01 10:52:08 AM

1. System Construction Analysis		**SCORE**
Drill Date	Prior to 1982	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	2002	
Well meets IDWR construction standards	Unknown	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	Unknown	2
Highest production 100 feet below static water level	Unknown	1
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	4

2. Hydrologic Sensitivity Analysis		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	6

3. Potential Contaminant Analysis		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use	Multi-family Residential	1	1	1	1
Farm chemical use high	No	0	0	0	0
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	No	0	0	0	0
	Total Potential Analysis - Land Use Score	1	1	1	1
Potential Contaminants – zero to three year time of travel					
Number of Potential Sources Present		3	3	3	1
(Score = # Sources X 2) 8 Points Maximum		**6**	**6**	**6**	**2**
Potential Sources of Class II or III leachable contaminants	Yes				
4 Points Maximum		**3**	**3**	**3**	**0**
Zero to 3 year time of travel contains or intercepts a Group 1 Area	No	0	0	0	0
Land use in the 0-3 year time of travel	Less Than 25% Agricultural Land	0	0	0	0
	Total Potential Contaminant Score in 0-3 year time of travel	9	9	9	2
	Cumulative Potential Contaminant Score Plus Land Use Score	10	10	10	3

4. Final Susceptibility Source Score					
(Cumulative Score X 0.2) + Hydrologic Sensitivity Score + System Construction Score		12	12	12	11

5. Final Well Ranking					
		Moderate	Moderate	Moderate	Moderate

The final scores for the community and non-community non-transient susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score
   Hydrologic Sensitivity + System Construction + (Potential Contaminant+Land Use x 0.2)

2) Microbial Final Score
   Hydrologic Sensitivity + System Construction + (Potential Contaminant+Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

13-18 High Susceptibility

Potential Contaminant Inventory

List of Acronyms and Definitions

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.